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ABSTRACT

Problems in educational cost accounting and a new cost accounting approach are described in this paper. The limitations of the individualized cost (student units) approach and the comparative cost approach (in the form of fund-function-object) are illustrated. A new strategy, an activity-based system of accounting, is advocated. Borrowed from business accounting procedures, this method views activities in terms of their value-added potential. The steps of an activity-based cost-accounting system are outlined. Conclusions are that the functional cost-per-student systems have significant limitations and that no link has been demonstrated between function and performance measures. Activity-based cost accounting identifies what adds value to educational processes and what does not. Four tables and one figure are included. (Contains 13 references.) (LMI)

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EDUCATIONAL COSTS

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Cost per student figures which are so prevalent in educational statistics cannot represent the actual cost of education. They are averages: often total expenditures[1,2] divided by total students. Cost comparisons based on the fund-function-object format do not indicate what costs should be either. They combine broad varieties of activities into categories which cannot be segregated into direct, contributing costs or marginal overhead. An altogether new cost accounting approach is needed in education that will help decide which educational activities effectively add value to the educational process. Business and industry have developed new cost systems to meet global challenges. Education should be addressing its challenges with a better cost-management system.

Individualized Cost. Student units are frequently utilized in educational research because of their comparability and size-controlling attributes. Student units are too different, one from another, that educational revenue and cost pools cannot be assigned accurately.

> It has been said that no unit costs are better than inaccurate ones; the reason being that unless they are reliable they may lead to unwarranted and erroneous conclusions on the part of administrators, taxpayers, and the public, generally. Crude unit costs, although both theoretically and technically correct, may be almost as misleading as inaccurate ones. No unit cost figure should be used as the basis for decisive action or opinions without careful evaluation in light of all pertinent facts.[3]

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There have been some excellent approaches to allocating educational costs: the Resource Cost Model, and more recently, the version the State of Illinois is developing, the adequacy model. They are, however, types of unit costs and largely misrepresent educational activity. They perform a useful service in that they convey in layperson's terms a seemingly understandable statistic. However, nothing remotely resembling actual costs for a student, or a program or an activity is achieved. Cost standards should be based instead on the specific elements of work activity that make up teaching, administration, and support.

Measuring, recording and reporting unit costs is risky and should not be used to form policy. Developing policy from a dollar figure per student, compresses an enormous range of disparity into one index. Per pupil cost is endemic in educational policy and not worth very much to administration. Consequently, not as much is known at the grass roots level about adequate educational financial support levels as has been presumed. And, new dollars for education should not be applied until it can be shown which specific activities will be affected, how quality will be affected, and how performance will be improved. One of the great leaps policy makers frequently make is from dollars to performance. Instead they should promulgate activities that will add value to the educational process, and direct appropriations toward contributing program activities and not toward per pupil units of measure.

In schools, site-based management has been inhibited by the allocation of dollars based on arbitrary amounts per student.

Most unit allocations are insubstantial and specious. Support service costs, for example, are not incurred because of average students served. They are incurred because of problematical situations. Classroom instruction, too, is seldom performed uniformly for all students. Funds should be allocated to specific purposes and for activities that arise from those purposes. Research should be directed toward measuring the costs of resources and qualities of purposeful activities for clients and programs. Methods of delivering instruction should be coupled with service administration.

The present Handbook II account code classification system in local education agencies does not let researchers identify the costs of education. Costs are broad and general, and not the basis any longer for measuring adequacy or efficiency. Standard programs that apply to most or all students do not exist anymore, and the present cost accounting systems cannot extract standard measures from the Handbook II classifications. When new money is available for education the work activity should be the target of the funding so teaching efficiency and technological productivity are achieved.

Comparative Cost. Financial statements for school districts follow the Handbook II format and report expenditures in one form or another of fund-function-object. Funds are education, building, transportation and so forth. Functions are primarily instruction, and the support services of the principal, executive district administration, psychologists, library, custodial, and so on. The objects are salaries, employee benefits, supplies, and equipment basically. In addition to the limited role, that of

satisfying legislated financial accountability, fund-function-object dimensions have formed the basis for district administrators' educational management decisions. Perhaps the reason why dates back to 1914 when J. Howard Hutchinson[4] lamented the fact that that type of expenditure information was not available from school districts. Supervision, he wrote, is "the result of functional organization; it determines largely the efficiency of an institution. It means centralization of control over specialized functions...." Notice the words "function" and "functional" which undoubtedly influenced the origin of present cost accounting.

The results in the first column of the following example show that seventy-one years later[5], national cost data was still locked into that functional structure.

	National Data %	Dist A %	Dist. B %	Dist. C %	Dist. D %
School Administration	3	7	7.3	7	7.2
Instruction					
Classroom teachers					
Teaching supplies					
Pupil support services					
Total	71.9	68.6	64.9	62.9	68.9
Library & Media	1.5	2.8	1.8	1.7	0
Health Services	0.1	0.9	0.2	0.7	0
District Administration	3.9	7.1	8	10.3	8.2
Plant Operation & Maintenance	11.2	10.2	14.3	13.9	11.9
Transportation	4.4	3	3.3	3.3	3.5
Food Service	4	0.4	0.2	0.3	0.2
Total	100%	100%	100%	100%	100%

The adjacent four district columns were 1991 data and were not helpful to administrators who were trying to make comparisons with standards to resolve expenditure problems. Another view of district expenditure utilizes a slightly different functional

breakdown that was not anymore helpful in analyzing district costs.

	Dist. A %	Dist. B %	Dist. C %	Dist. D %
Operation Expenditures per Pupil	100	100	100	100
Teacher Salaries & Benefits	42.8	44.1	39.8	25.5
General Administration & Business Salaries & Benefits	3.6	3.9	6.3	3.4
School Administration Salaries & Benefits	6.6	6.9	6.7	6.1
Pupil Support Services Salaries & Benefits	2.8	1.3	1.3	3.4
Transportation Costs	6.2	12	13.8	7.9

And, a third view lifts the comparison data straight from the contemporary Handbook II functional breakdown.

	Dist. A %	Dist. B %	Dist. C %	Dist. D %
Instruction				
Regular	50.0	61.3	50.8	52.2
Special Education	7.7	8.4	7.7	6.8
Vocational	5.5	0.0	6.2	4.8
Interscholastic	5.2	4.5	3.6	3.2
Other	1.1	0.5	0.5	0.4
Total	69.5	74.7	68.8	67.5
Support Services				
Pupil	3.8	2.2	2.0	4.1
Staff	4.3	2.7	2.0	4.1
Total	8.1	5.0	4.0	8.2
General Administration	6.1	4.2	10.2	4.9
School Administration	7.7	9.1	8.3	8.3
Business	8.5	7.0	8.7	10.6
Total	100.0	100.0	100.0	100.0

Attempts at determining educational costs have been hampered by a national paralysis with fund-function-object. The approach to educational cost accounting has not changed much in this century. In an attempt to develop an adequate school spending level by state in 1983, Jerry Miner6 compiled data in the familiar

categories and wrote afterwards that it was impossible to derive an objective standard.

Instructional Expenditures		61.2%
Instructional staff	77.2	
Noninstructional staff	5.3	
Books, supplies, and other	17.5	
Plant Operations and Maintenance		11.2
Salaries	41.0	
Utilities	33.0	
Supplies and other	26.0	
Administration		4.9
Salaries	70.0	
Supplies and other	30.0	
Transportation		4.4
Salaries	60.0	
Supplies and other	40.0	
Food		3.6
Attendance, Health, and other		1.1
Salaries	75.0	
Supplies and other	25.0	
Fixed Charges		13.6
		100%

In the large urban school districts, about a third of what is spent is on direct classroom instruction (a little less for elementary and a little more for high school) and two-thirds on the indirect functions[8,9].

Because the general ledger of school districts cannot be magically reoriented, actual costs for students or groups or an educational program cannot be accurately measured without complicated, time consuming questionnaires that annoy administrators. Contemporary costs are not generalizable and of little value to anyone.

In Illinois, the legislature and public education regulatory agency have focused on a cost algorithm that is similar to the Resource Cost Model (RCM)[7]. RCM had a brief run of popularity with legislators and regulatory agency personnel because it

promised: effective allocation of resources, reconstituted educational programs, precise levels of service, human interaction to determine optimal resource use, unbiased resource standards, to unite educators and policy-makers, combined interests of many program categories. Unfortunately, RCM achieved none of these things with Illinois schools because it imposed such enormous overhead burdens on school districts that they could not assimilate the extra work required. The legislature and state regulatory agency adequacy algorithm reduces the RCM approach to class size and personnel requirements. The cost of operating a classroom is expressed in fractions of teachers and support personnel per pupil times the number of pupils in the classroom. The system averages averages: average educators per pupil times average salary per educator times average pupils per class. The state's current Operating Expenditure Per Pupil index represents costs based on previous years' expenditures. The statistic does not represent the actual cost of any student in the state because costs vary so much by region, district, school, program, and student.

In explaining the difference between total expenditures for a classroom and a teacher's salary and benefits the fund-function-object system lets the researcher down. Multiplying an <u>average</u> expenditure per student amount by an <u>average</u> class size of twenty-two students yields about one hundred thousand dollars. Subtracting an <u>average</u> teacher salary leaves approximately sixty thousand dollars. That majority of the cost is not the teacher, the major, direct education contributor, it is attributable to support service personnel, specialists, principals, central

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administrators and the others. What is somewhat startling is that the teacher accounts for so little of the total cost of running a classroom.

From another perspective eighty percent and more of educational costs are generally conceived to be for personnel cost--salaries and benefits. This seems contradictory because one view lends itself to the conclusion that not much can be gained from cost-cutting when less than half of what is spent is for direct instruction. While from the other view instructional salary costs consume such a large share of educational costs, that efficiency analysis is warranted.

Activity Costs. There appears to be a better way of cost accounting for education. And, a new approach to educational cost analysis is needed because of the potential for increased education dollars in the future[10]. Businesses have been adopting an activity-based system of accounting. From a fiscal imperative that began with Hutchinson's frustrations and continues to frustrate financial managers, it is apparent that education's traditional expenditure breakdowns should give way to new cost accounting strategies and productivity measures.

Direct labor has decreased and overhead has increased markedly in business and probably in education as well. The product that works its way down a manufacturing line gathers hundreds of operations that with technology constitute only minutes of direct labor and represent only a fraction of the cost. A student in a classroom with twenty-five other students receives only 1/26th of the teacher's time, possibly only 1/300th of the counselor's time, and perhaps 1/500th of the principal's time. The conventional

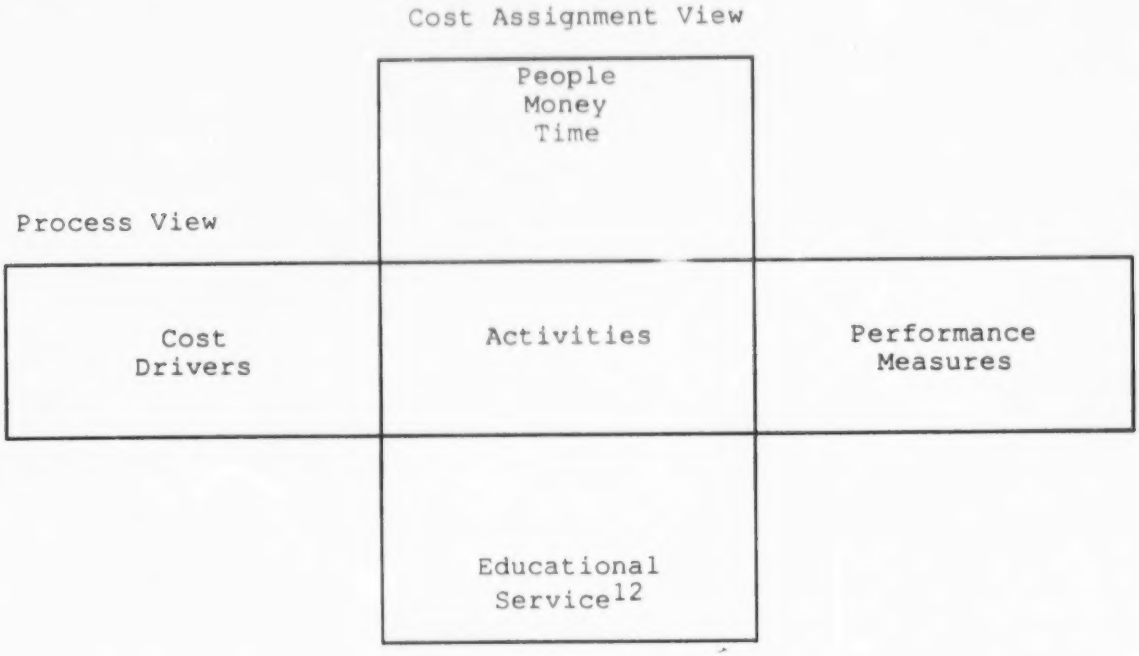
systems that we have been using cannot account for these miniscule direct costs; activity-based systems can.

Peter Turney[11] wrote that "conventional cost systems are dominated by functional classifications": Functional cost systems, of the type prompted by Hutchinson, the type most state school systems still use. As complex as school are today, these cost systems fail to work because they have to focus on broad categories of costs--instruction, support services--, and new systems of cost analysis focus on specific activities. Traditional cost accounting systems, which never handled indirect cost allocation well, are being converted to activity-based cost accounting systems because they allocate overhead more accurately. Enterprise cannot be managed along functional lines anymore but can be managed as processes and activities. Cost analysis looks at resources, activities, and services now.

Service is the culmination of a process. A process is made up of activities. The cost system is linked to the activities. Activities consume costs just as a service consumes activities. This may not seem fundamentally different, but when a process view of things is taken instead of a functional view, cost measures change significantly. Separating activities into those that add value and those that do not also leads to more efficiency in part because non-value-added activities are identified.

Activity-based cost accounting is an evolving body of knowledge. It originated within the manufacturing industry, it has been applied to service industries and can be applied to education. The activities in education will fall into two categories: activities that are essential to performance and

possess outcome value (instruction) and activities that are essential to the organization (overhead). With cost analysis, value-added activities occur more as a result of strategic choices than functional continuation. The choices will become more important to the educational enterprise when the activities are viewed in terms of their value-added potential.



The following steps outline an activity-based cost accounting process:

1. Identify established activities.
2. Assign variable and fixed costs for each activity.
3. Determine the cost drivers for each activity.
4. Calculate unit cost for each activity by dividing all of the cost by the cost drivers.
5. Apply the activities to services.[13]

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Activity-based cost accounting systems will answer educational cost questions and assist research and policy formulation. For a primer on the subject, refer to Peter Turney's book, Common Cents: The ABC Performance Breakthrough. The old, functional cost-per-student systems have not revealed very much about education finance. Variations on functional cost breakdowns will not help decide what should be spent on education. No research has convincingly linked functions to performance measures[14]. Activity-based accounting will begin to determine what adds value to educational processes and what does not.

ENDNOTES

[1]In this paper, expenditure and cost are used interchangeably, but expenditures might be defined as what school districts spend and costs as what they should have spent.[2]

[2]David H. Monk, "Educational Costs and Small Rural Schools," *Journal of Education Finance* (Fall 1990): 213-225.

[3]Leon E. Hay, *Accounting for Governmental and Non-Profit Entities* (Homewood, Illinois: Irwin, Inc., 1989).

[4]J. Howard Hutchinson Ph.D., *School Costs and School Accounting* (New York: Teachers College of Columbia, 1914).

[5]James Fox, "An Analysis of Classroom Spending," *Planning and Changing* (n.d.): 154-162.

[6]Jerry Miner, "Estimates of Adequate School Spending by State Based on National Average Service Levels," *Journal of Education Finance* (Winter 1983): 316-342.

[7]Bruce S. Cooper, "Right On, Fred Hess, Wrong Charges: A Further Look at School Microfinance," *Network News and Views* (June 1992): 79-83.

[8]Michael Fischer, "Fiscal Accountability in Milwaukee's Public Elementary Schools: Where Does the Money Go?" *Wisconsin Policy Research Institute Report* (September 1990).

[9]Jay G. Chambers and Thomas B. Parrish, *Adequacy and Equity in State School Finance and Planning: A Resource Cost Model Approach* (Stanford, CA: Institute for Research on Educational Finance and Governance, 1983).

[10]Allan R. Odden and Lawrence O. Picus, *School Finance: A Policy Perspective* (New York: McGraw-Hill, Inc., 1992).

[11]Peter B. B. Turney, *Common Cents: The ABC Performance Breakthrough* (Hillsboro, OR: Cost Technology, 1991).

[12]Peter B. B. Turney, "Activity-Based Management," *Management Accounting* (January 1992): 21.

[13]Ronald J. Lewis, "Activity-Based Costing for Marketing," *Management Accounting* (November 1991): 33-36.

[14]Keith Baker, "Yes, Throw Money at Schools," *Phi Delta Kappan* 72 (April 1991): 628-630.